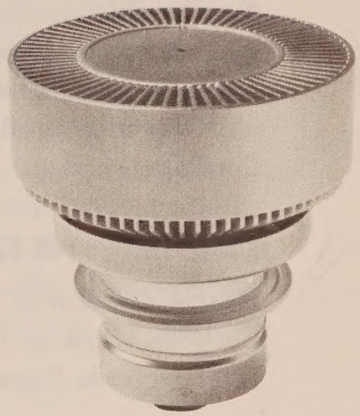
The Y730 is a planar triode of ceramic/metal construction and rugged design to be used especially in highly linear amplifier operations up to 1.5 GHz.

The Y730 may be used as an amplifier or an oscillator in the CW as well as the grid or plate-pulsed mode. In T.V. translator service, transmitting simultaneously video and aural signals in the same channel the intermodulation distortion level is better than -52 dB.



GENERAL CHARACTERISTICS[1]

ELECTRICAL

Cathode: Oxide Coated, Unipotential

Heater: Voltage	5.5 ± 0.15V
Current, at 5.5 volts	3.2A
Transconductance (Average):	
Ib = 350 mA	100 mmhos
Amplification Factor (Average):	165
Direct Interelectrode Capacitance (grounded cathode)[2]	
Cin	19.0 pF
Cout	0.07 pF
Cgp	6.5 pF
Cut-off Bias[3]	-12 V max
Frequency of Maximum Rating:	1.5 GHz

1. Characteristics and operating values are based upon performance tests. These figures may change without notice as the result of additional data or product refinement. EIMAC Division of Varian should be consulted before using this information for final equipment design.

2. Capacitance values are a cold tube as measured in a special shielded fixture. When the cathode is heated to the proper temperature, the grid-cathode capacitance will increase from the cold value by approximately 2 pF due to thermal expansion of the cathode.

3. Measured with one milliampere plate current and a plate voltge of 1 kVdc.

(Revised 5/11/81© 1981 by Varian)

Printed in U.S.A.

MECHANICAL

Maximum Overall Dimensions:	
Length	3.188 in; 81.0 mm
Diameter	2.790 in; 71.4 mm
Net Weight	26.8 oz; 760 gm
Operating Position	Any
Maximum Operating Temperature:	
Ceramic/Metal Seals	250°C
Cooling	forced air

RANGE VALUES FOR EQUIPMENT DESIGN

	Min.	Max.
Heater: Current at 5.5 volts	2.9	3.5 A
Cathode Warmup Time	120	— sec.
Interelectrode Capacitance[1] (grounded cathode connection)		
Cin	17.5	20.5 pF
Cout	—	0.07 pF
Cgp	6.0	7.0 pF

1. Capacitance values are for a cold tube as measured in a special shielded fixture.

AMPLIFIER OR OSCILLATOR

ABSOLUTE MAXIMUM RATINGS:

DC PLATE VOLTAGE	3000 VOLTS
PEAK PULSE PLATE VOLTAGE	3500 VOLTS
DC GRID VOLTAGE	-150 VOLTS
INSTANTANEOUS PEAK GRID-CATHODE VOLTAGE	
Grid negative to cathode	300 VOLTS
Grid positive to cathode	30 VOLTS
DC PLATE CURRENT	0.6 AMPERES
DC GRID CURRENT	0.05 AMPERES
AVERAGE PLATE DISSIPATION	
Forced Air Cooling	1000 WATTS
GRID DISSIPATION (Average)	1.5 WATTS

TYPICAL OPERATION

Class A linear amplifier in T.V. translator service aural and video signal simultaneously).

Frequency	760 MHz
Heater Voltage	5.5 VOLTS
DC Plate Voltage	1900 VOLTS
DC Grid Voltage (Approximate)	-6.5 VOLTS
DC Plate Current	350
Gain	21 dB
Power Output (Peak Sync)	100 WATTS
IMD (3 Tone Test)	> -52 dB

APPLICATION

For general application information please refer to the Planar Triode Operating Instruction Sheet. The operating instructions should be consulted prior to the designing of new applications around the above tube type. For unusual and special applications consult the nearest Varian Electron Tube Field Office, or the Product Manager, EIMAC Division of Varian, Salt Lake City, Utah.

The cathode and grid flanges should not be altered in any way such as by machining or filing, since the final seal could be damaged.

Cooling should be provided in accordance with the air flow requirements of Figure 3. Under standard conditions (sea level, atmospheric pressure and an ambient temperature of 25°C) 13.5 SCFM (382 ℓ /min) of air with a corresponding pressure drop of .55 in. H_2O (1.38 mbar) is required to limit the electrode terminals and ceramic to metal seals of the tube to their maximum permissible temperature of 250°C with an anode dissipation of 1000 watts. For specific cooling requirements refer to Figure 3 and Figure 4. A minimum air flow of 2.7 SCFM (77 ℓ/min) is required at all times, as soon as heater voltage is applied to avoid damage to the tube. Auxiliary air flow apart from the air flowing through the radiator should be provided to cool the tube envelope and other tube terminals. Some condution cooling is always provided through the contact terminals. However, these terminals usually exhibit poor heat transfer, often having a temperature gradient across them as high as 50°C.

This tube type has a heater-cathode design with higher efficiencies. Due to this fact the heater current is lower than that found in comparable tube types. This must be taken into consideration when installing tubes into existing equipments.

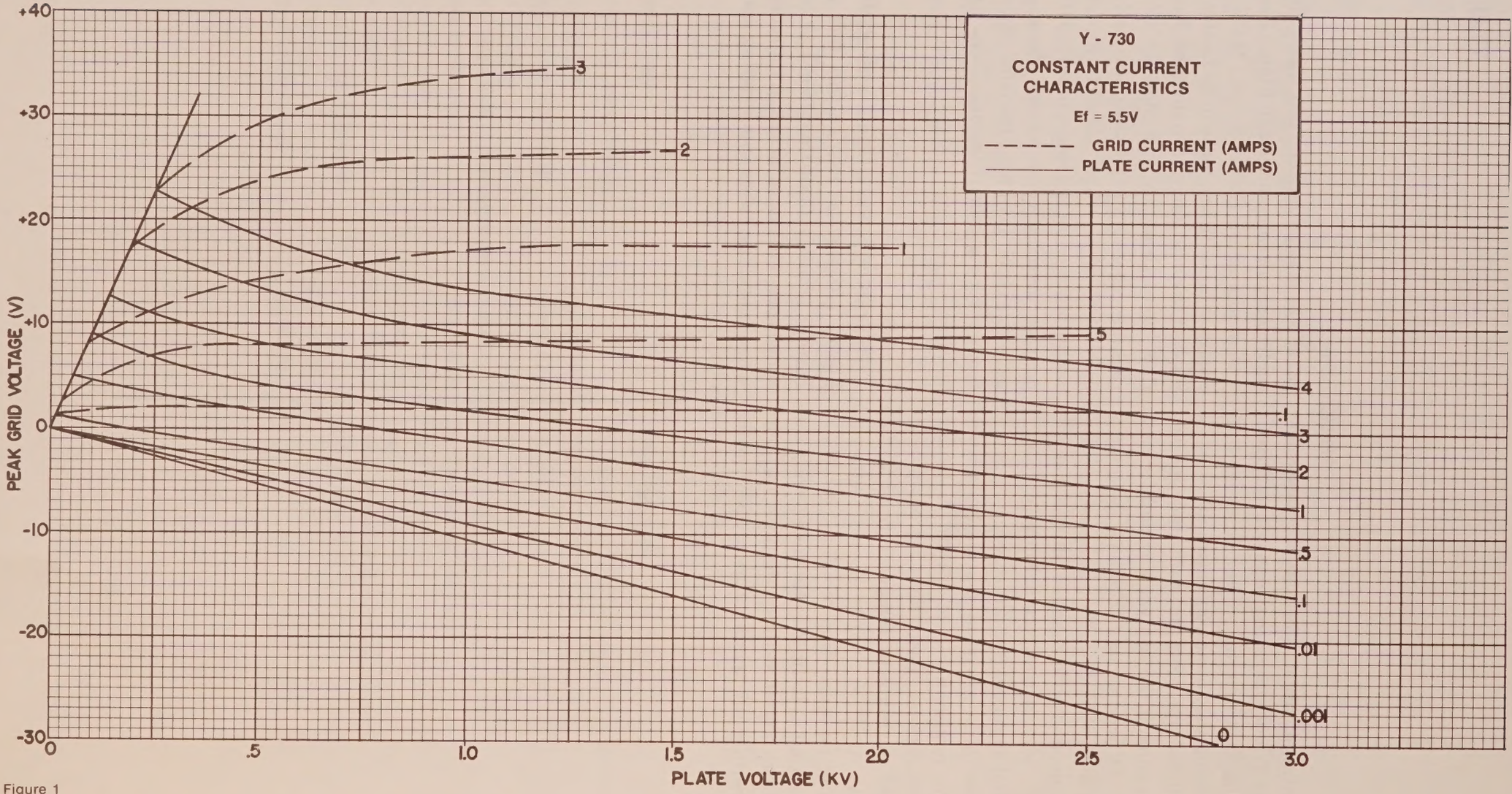

Y - 730
CONSTANT CURRENT CHARACTERISTICS
Ef = 5.5V
GRID CURRENT (AMPS)
PLATE CURRENT (AMPS)
PEAK GRID VOLTAGE (V)
+40
+30
+20
+10
0
-10
-20
-30
0
.5
1.0
1.5
2.0
2.5
3.0
PLATE VOLTAGE (KV)
3
2
1
.5
.1
4
3
2
1
.5
.1
.01
.001
0

Figure 1

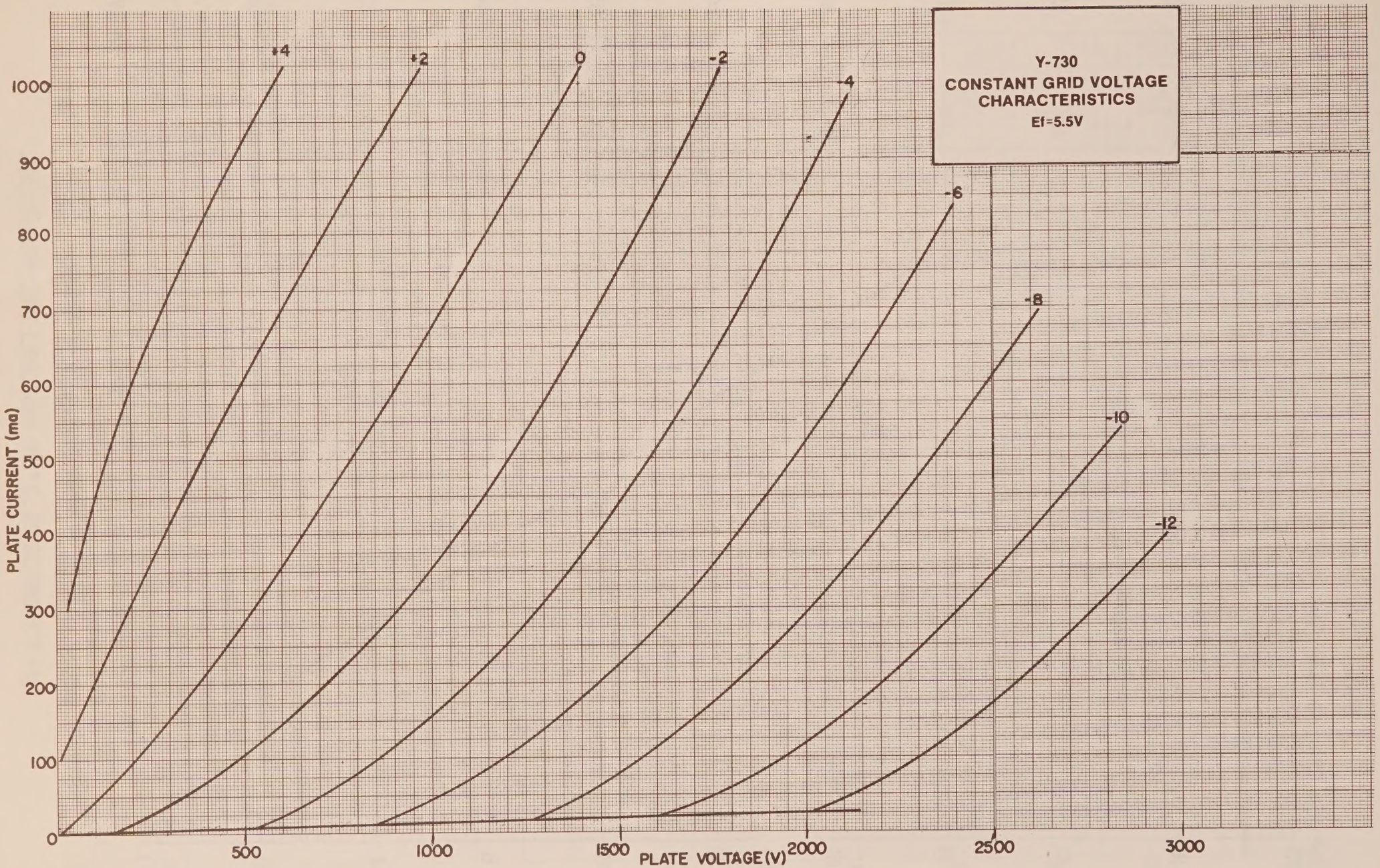

Y-730
CONSTANT GRID VOLTAGE
CHARACTERISTICS
Ef=5.5V
+4
+2
0
-2
-4
-6
-8
-10
-12
PLATE CURRENT (ma)
1000
900
800
700
600
500
400
300
200
100
0
500
1000
1500
2000
2500
3000
PLATE VOLTAGE (V)

Figure 2

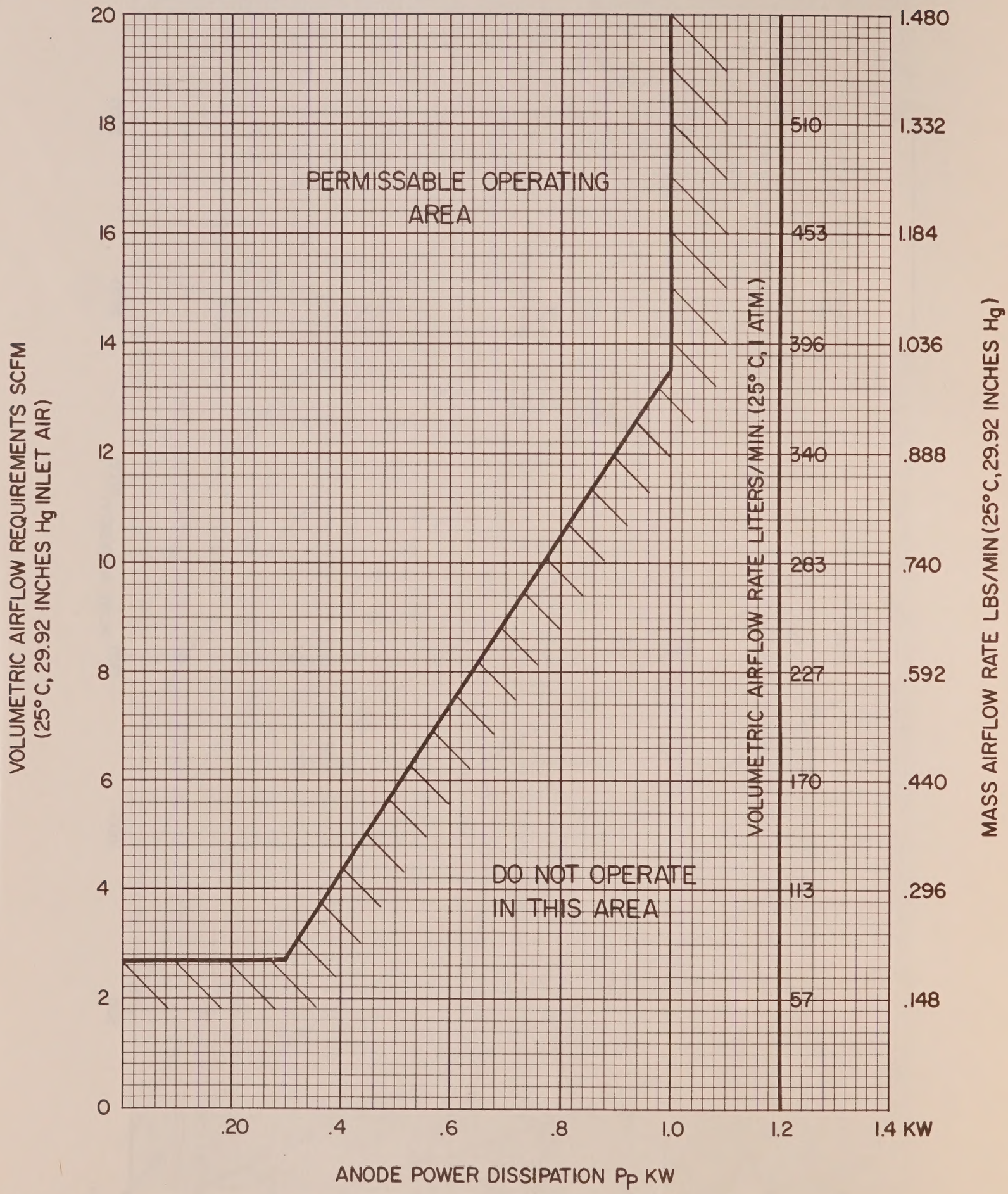

PERMISSABLE OPERATING AREA
DO NOT OPERATE IN THIS AREA
VOLUMETRIC AIRFLOW REQUIREMENTS SCFM (25°C, 29.92 INCHES Hg INLET AIR)
VOLUMETRIC AIRFLOW RATE LITERS/MIN. (25° C, 1 ATM.)
MASS AIRFLOW RATE LBS/MIN (25°C, 29.92 INCHES Hg)
ANODE POWER DISSIPATION Pp KW
0
2
4
6
8
10
12
14
16
18
20
57
113
170
227
283
340
396
453
510
.148
.296
.440
.592
.740
.888
1.036
1.184
1.332
1.480
.20
.4
.6
.8
1.0
1.2
1.4 KW

Figure 3

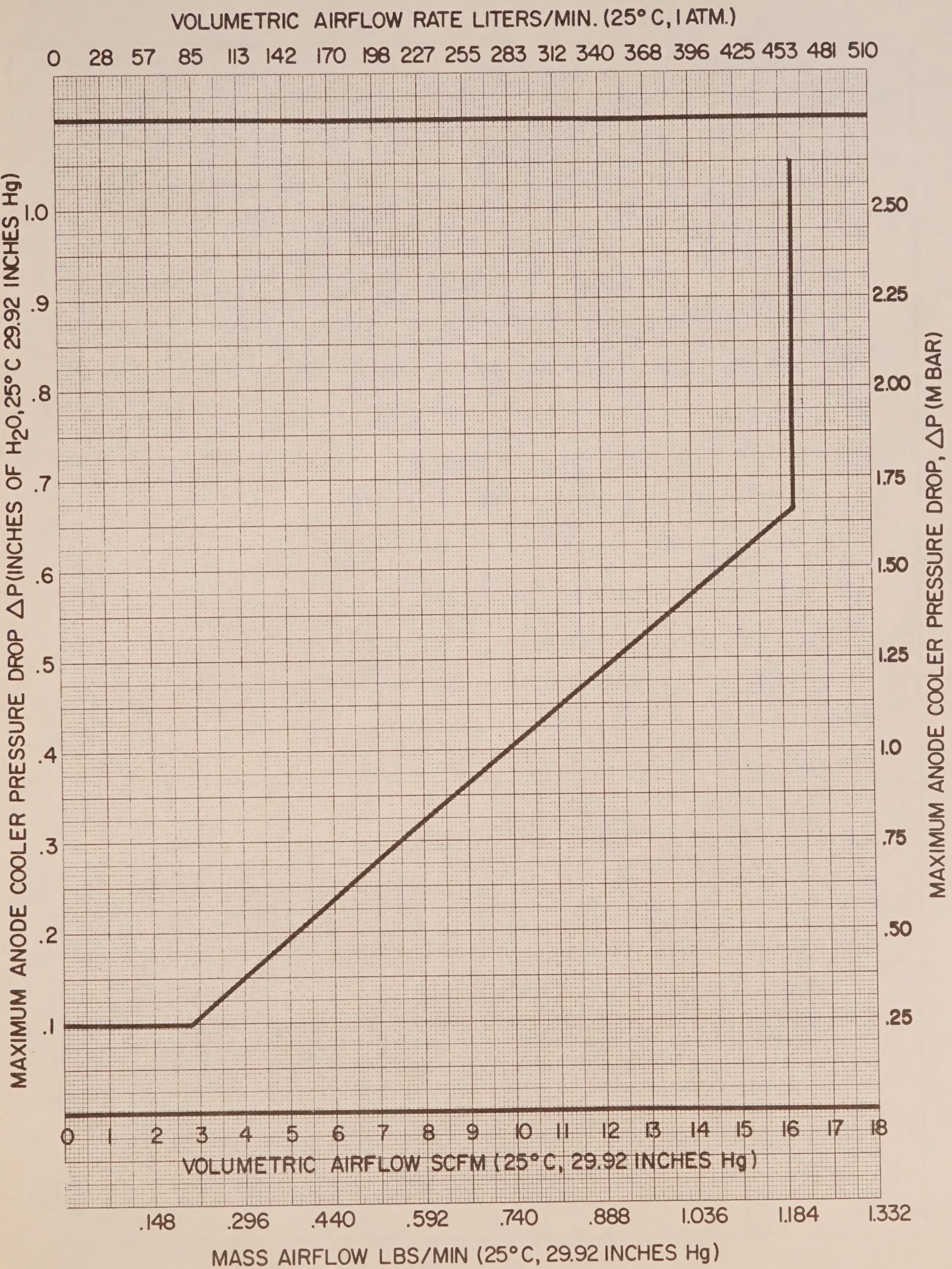

VOLUMETRIC AIRFLOW RATE LITERS/MIN. (25° C, 1 ATM.)
0 28 57 85 113 142 170 198 227 255 283 312 340 368 396 425 453 481 510
MAXIMUM ANODE COOLER PRESSURE DROP ΔP (INCHES OF H2O, 25° C 29.92 INCHES Hg)
1.0 .9 .8 .7 .6 .5 .4 .3 .2 .1
MAXIMUM ANODE COOLER PRESSURE DROP, ΔP (M BAR)
2.50 2.25 2.00 1.75 1.50 1.25 1.0 .75 .50 .25
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
VOLUMETRIC AIRFLOW SCFM (25° C, 29.92 INCHES Hg)
.148 .296 .440 .592 .740 .888 1.036 1.184 1.332
MASS AIRFLOW LBS/MIN (25° C, 29.92 INCHES Hg)

Figure 4

Notes:

1. Metric equivalents to the nearest .01 mm are given for general info. only & are based on 1 inch = 25.4 mm
2. Do not clamp or locate on this surface
3. Ref. dims. are for info. only & are not req'd for inspection purposes.

DIMENSIONS IN MILLIMETERS				DIMENSIONS IN INCHES		
MIN.	MAX.	REF.	DIM.	MIN.	MAX.	REF.
	81.0		A		3.189	
53.34	53.90		B	2.100	2.122	
31.24	32.77		C	1.230	1.290	
69.0	71.0		E	2.717	2.795	
5.2	6.8		F	.205	.268	
1.30	1.70		G	.051	.067	
7.0			J	.276		
19.5	20.5		K	.767	.807	
30.0	32.0		L	1.181	1.260	
35.94	36.47		S	1.415	1.436	
45.59	46.35		T	1.795	1.825	
13.08	13.59		W	.515	.535	

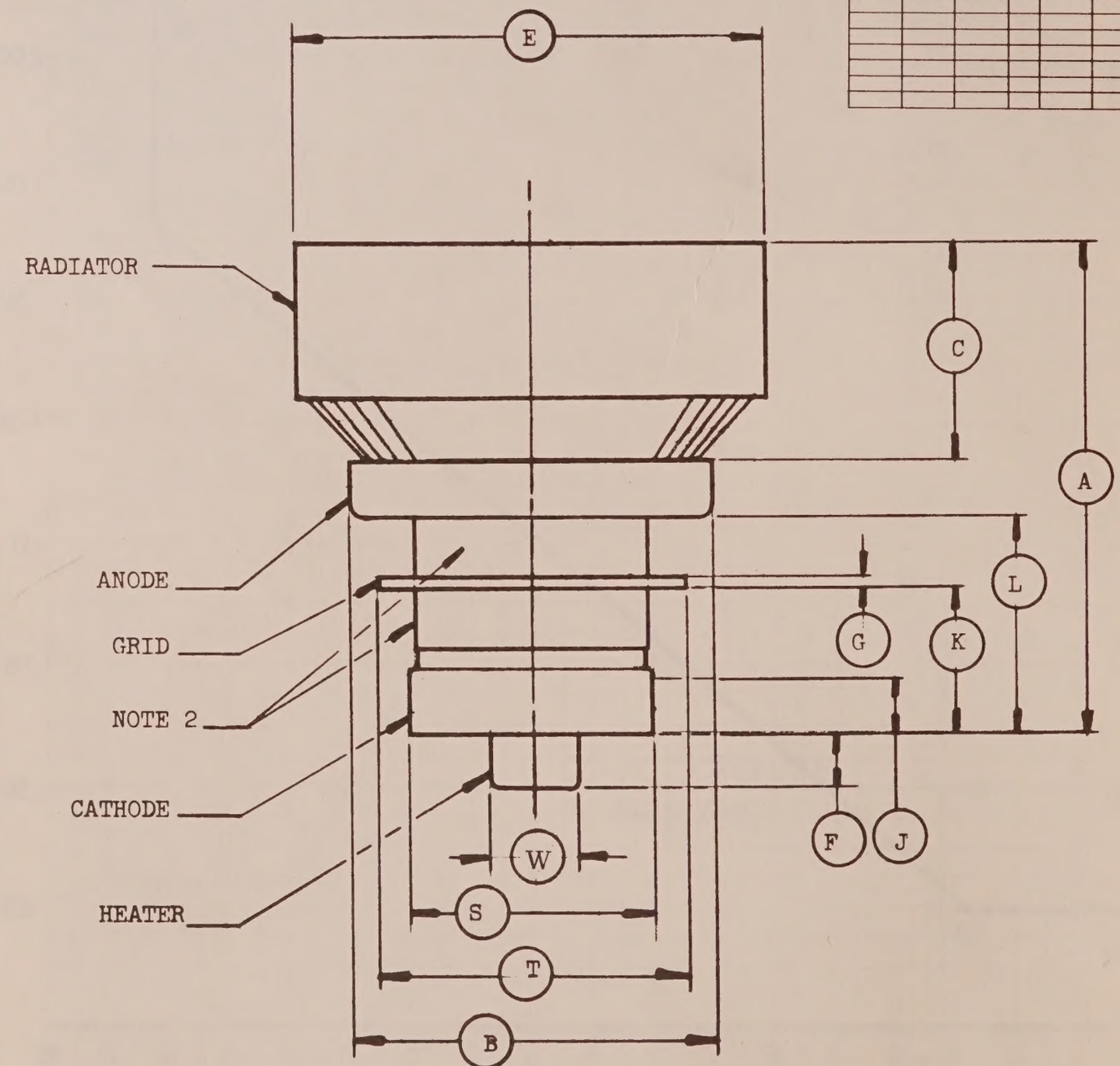


Figure 5